

A TRIPARTITE TEACHING MODULE FOR MATHEMATICAL PROOF

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Herein we present an analysis of a teaching module, based on Fossa (2009), whose objective was to develop the participants' understanding of mathematical demonstration, as well as their ability to produce their own mathematical proofs. The module consisted of three parts, the first of which was the participants' analysis of a series of five dialogues, centering on interesting mathematical topics and a few paradoxes. The participants were asked to identify and evaluate the arguments of the characters in the dialogues, as well as to respond to the text by voicing and defending their own opinions. The second part consisted of an investigation of the logical structure of certain important proof techniques, such as conditional arguments, all/some arguments, reductio ad absurdum and mathematical induction. Finally, in the third part, the students were presented with mathematical proofs, taken from, for the most part, college textbooks, and asked to analyse the proof techniques used. The participants responses to the three parts of the module is being analysed along the lines of Skemp's (1976) instrumental and relational understanding. Preliminary results indicate substantial improvement in the participants' abilities to work with and attitudes toward mathematical proof, thereby approximating the goal (see Fossa, 2001) of being independent and creative thinkers about mathematics.

References

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